**Enhancing communities’ adaptive capacity to climate-change induced water scarcity in drought-prone hotspots of the Blue Nile basin, Ethiopia**

(ILIRI- UNEP-WU PROJECT)

**A report on ILRI-UNEP-WU project progress evaluation and discussion**

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Kindu Mekonnen and Derbew Kefyalew

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1. **Introduction and objectives of the evaluation and discussion**

ILRI, UNEP and WU are implementing a pilot project on “Enhancing communities’ adaptive capacity to climate-change induced water scarcity in drought-prone hotspots of the Blue Nile basin, Ethiopia”. The project is operationalized at Kabe watershed of the Woreilu Wereda in south Wollo zone, Amhara region. A project evaluation and discussion was organized and held from 27-31 August 2012 both at the watershed site and in Wollo University. The objectives of the evaluation exercise and discussion were to have an overview on project interventions implemented at farm, landscape and watershed level, identify gaps for the implementation of some of the planned project activities and come up with a concrete plan for the finalization of the pilot phase of the project.

1. **Field visit program**

The different partners (farmers, Wereda Office of Agriculture, Wereda Admin, researchers from Sirinka and Wollo University, ILRI and UNEP representatives) met at Kabe town school compound and briefly introduced each other. The Wereda Administrator talked about the decline of land resources in the Wereda and its consequences on food security related matters. He is also confident enough to reverse the food insecurity and land degradation situation of the Wereda so long us there is collaboration with various stakeholders. According to him, the field visit and discussion can help the community to own the project activities.

The Wereda Office of Agriculture head also mentioned how rainfall variability is serious in the Wereda. Recently, the Wereda is getting support from the government and other partner institutions/organizations. The farmers and the experts from various institutions are working hard to change the image of the Wereda. There is a need to strengthen the SWC move and scale up success stories/best practices to other similar areas. Finally, he expressed his appreciation for the Wereda has been selected as one of the project implementation sites.

Dr. Elizabeth on her behalf briefly introduced the participants about the background of the project. The project is focusing on the development of interventions that improves crop-livestock productivity and water conservation related issues. The project is at a piloting phase where it generates successful practices that can be a lesson for other areas.

Representative farmers from the different gender groups shared their ideas concerning the project interventions. They are happy in having different crop varieties, horticultural crops (garlic, potato, carrot and other vegetables) around their home-gardens/backyards, water harvesting structures, spring development initiatives and land management practices. These days, they are realizing positive changes on those degraded and deforested landscapes. Farmers have requested further support to bring more visible changes in the degraded landscapes and impact on their livelihoods.

The field visit started from the upper part of Abagrja sub watershed and continued to the middle and downstream areas. The interventions visited by the participants are SWC physical structures and biological measures, home-garden/backyard activities (carrot, potato, garlic, cabbage, lettuce and apple), communal grazing land management, improved springs, gully stabilization activities, water harvesting structures, various crop varieties (faba bean, field pea, barley, wheat) demonstration and evaluation trials.

1. **Presentation of activities and discussion**
   1. **Opening address, keynote address and introduction of participants**

The welcoming address for the one day meeting was made by Dr. Mekonnen (Vice president of WU). In his speech, Dr. Mekonnen mentioned the effect of climate change on water, crop production and food security. He also emphasized the importance and contribution of the project interventions on climate adaptation in Kabe watershed.

Keynote address was made by Dr. Elizabeth Migongo-Bake (UNEP, Task Manager-Dry land ecosystem). Her keynote address was focused on key drivers of the project (UNEP, ILRI, WU, SARC and Woreilu OoA) and the highlights of the project. According to her, the project is a pilot project that operates in Ethiopia and Uganda. Ethiopia is the sources of Blue Nile and Uganda is within the Lake Victoria region. Blue Nile and Lake Victoria are the sources of water for White Nile in Egypt. The project at Kabe watershed in Ethiopia is intended to (a) help the communities to prepare themselves for climate adaptation as the site is characterized by drought prone landscapes, (b) build on traditional interventions, (c) bring other interventions from the knowledge that exist elsewhere, (d) Make the farmers appreciate the knowledge in a simple way, (e) work on an integrated way with different stakeholders, (f) find out ways on how to scale out and up the lessons at local, national and regional level, and (g) improve the wellbeing of humans (education, health…).

After the opening and keynote addresses, Ato Teklemariam Bekele (Research Director of Wollo University and focal person for ILRI-UNEP-WU project) introduced himself and requested the participants to introduce each other. A total of 24 experts from Wollo University (12), Sirinka Agricultural Research Center (5), Woreilu Wereda (3), ILRI (3) and UNEP (1) participated in the meeting/discussion.

* 1. **Highlights of presentations from different institutions**
     1. ILRI-UNEP-WU project process- presented by Mr. Teklemariam

The project was started by signing Memorandum of Understanding (MoU) among all partners. Strong partnership, commitment of all the team members and higher officials of the respective institutions and the community at large are the basis for the success of the project. This strong partnership can be considered as a good lesson for other projects. The financial report and capacity building related activities of the project have been reported. Capacity building included training of farmers and extension workers/experts at Kabe and Woreilu, respectively. Lack of transport, delay in budget release and lack of and/or poor hotel services at Kabe found to be major challenges encountered during the implementation of project interventions. Budget deficit due to inflation of prices of plantation and construction material was also mentioned as one of the most important obstacles for the implementation of the remaining activities.

* + 1. Wollo University presentations (socioeconomic survey, home-garden, forage and agroforestry, water activities)
       1. Socioeconomic survey – presented by Mr. Fikru Assefa

Data for the socio-economic survey was generated using a household survey questionnaire and farmers group discussion (FGD). The information collected from socioeconomic survey include demographic characteristics, agricultural system, home-garden practices, inputs and extension services, credit and saving and climate change aspects of the Kabe watershed. According to the survey work, above three-fourth of the total communities in Kabe watershed do not cover their annual food requirement from they produce on their farm land; and inorganic fertilizers followed by improved cooking stoves are the most widely adopted technologies as compared to other inputs.

Question:

* What are the drivers or incentives for the farmers to utilize inorganic fertilizer?

Comments:

* Some of the results seem exaggerated particularly the existing home-garden practices of the area.
* Separate the socioeconomic data for pre and post project interventions.
* Incorporate all the suggested comments and focus on important components that match with the project objectives.

Answer:

* The government initiative/effort to introduce inorganic fertilizer on a credit base has encouraged farmers to adopt the input in the area.
  + - 1. Home-garden, forage and agroforestry– presented by Mr. Yeshi Muluneh

Home gardening in Kabe watershed is important as it involves women and family members, contribute as sources of income, improve nutrition, maintain sol fertility and directly and indirectly play a role to climate adaptation. Site and participating farmers’ selection for this activity was made along the landscape. Awareness creation and purchasing and provision of planting material (highland fruits and potato varieties) were part of the intervention activities. Other vegetable seeds and seedlings (garlic, carrot, spinach, shallot, and cabbage) were also introduced and planted in a total of 50 selected farmers’ fields in the watershed. In the forest development and related activities, wild seedlings of ‘Asta’ (*Erica arborea*), high land bamboo and ‘guassa’ grass (*Festuca* spp) were planted at the top of mount Yewol. In addition, other local and exotic tree species were planted in other two watershed sites. Regarding the forage development related activities, forage seeds and seedlings were planted on SWC structures and at the backyard of different households. The challenges encountered during the implementation of the interventions were poor understanding of the farmers on home-gardening, poor soil fertility, policy gap on home-garden systems and poor policy enforcement on free grazing. However, farmers’ commitment to participate in the implementation of various interventions, water availability and existence of strong partnership were the opportunities to implement the project activities in the watershed.

Comments:

* The coverage of home-garden system in the watershed (50 farmers) is too small as compared to the potential that exist in the watershed.
* We need to link the role of the interventions to climate change adaptation. The way how the interventions help the communities to prepare and adapt climate change should be well explained. At the end of the day, we also need to integrate all the interventions in a holistic manner.
* The report on forage tree plantation should be explained in terms of area coverage, survival rate and number of beneficiaries.
  + - 1. Water activities – presented by Mr. Mohammed Seid

Water related interventions concentrated in the middle and downstream parts of the watershed. Rehabilitation of the upstream was expected to help recharge water bodies of the middle and downstream parts of the watershed. Hence, spring development efforts were made in the middle part while shallow wells (hand dug wells) were constructed in the downstream of the watershed. One water harvesting structure was also constructed in the middle part of the watershed. The construction of night storage dam and watershed delineation activities delayed as they demanded further discussion and collaboration with Woreda Office of Agriculture and ILRI, respectively.

Questions:

* Is there any community arrangement such as byelaws for sustainable use of already developed springs?
* Were there hand dung wells before the project intervention in the area?
* Did you do a cost-benefit analysis for the wells and springs?

Answers:

* Byelaws for sustainable use of springs have not been developed yet.
* The Woreda Office of Agriculture did some work on shallow wells before the project intervention but not on the construction of hand dung wells.
* There is no cost-benefit study on springs developed after the project intervention.

Suggestions:

* The watering points in the watershed need characterization. Similar experience from Galessa watershed in central parts of Ethiopia can be explored for reference purposes.
  + 1. Sirinka Agricultural Research Center presentations (soil and water, crops, forage and livestock)- presented by Asmare Wubet

The Sirinka research group has been doing research on pre-scale up of improved crops (food barely, wheat, faba bean and field peas), introduction and evaluation of pre-weaning growth performance of Awassi cross, introduction and evaluation of yield performance of different forage, grass and legume species in the watershed, participatory evaluation and demonstrations for two different types of rope and washer pump, participatory evaluation of family drip technology, demonstration of different check-dams and grass species for gully rehabilitation, participatory evaluation and demonstration of recommended N and P fertilizers, participatory evaluation of different in-situ water harvesting structures in improving survival rate of seedlings, participatory evaluation of early performance of grass species for bund stabilization, demonstration of multi-purpose tree/shrub and grass species on hillsides, homesteads, farm boundaries and gullies. In addition they conducted group discussion, training and awareness for all technology dissemination activities.

Comments/questions:

* The activities undertaken by Wollo University and SARC seem duplicated.
* Do the crop varieties have the capacity to withstand moisture stress conditions?

Answer:

* All the activities have been reviewed to avoid redundancy. SARC is engaged in research while Wollo University carried out the development part of the project at a wider context.
* Early maturing crop varieties are introduced to cope with the rainfall variability/ early session of rain in the area.
  + 1. Woreilu wereda office of agriculture presentation (community mobilization and collective action, and plantation) - presented by Mr. Getachew

Awareness creation, community consensus meetings on collective action and formation of watershed committee were some of the Woreda’s initial responsibilities. The Wereda facilitated the implementation of different physical and biological soil and water conservation practices, plantation of tree and forage seedlings on hillsides and farmlands and around the homesteads. The local communities voluntarily participated in the watershed management activities for 60 days to support the government recent initiatives.

Comment:

The collective action process and lessons particularly on free grazing should be documented. The approach on collective management of communal grazing land should not be from top to down. Animal feed options should be looked at and community decisions respected.

* + 1. Presentations on cross cutting issues (climate change trends, and community perception on variability/climate change)
       1. Climate change trends- presented by Mr. Gashaw Bimerew

The presentation focused on analysis of climate change, climate variability and extremes in Kabe Watershed. The general overview included presentations on the global climate change scenarios, definition of terms, methods used for analysis and explanation of results. The objective of the study was to assess climate change, climate variability and extremes occurred in the area and predict the future climatic condition. Station observed data and General Circulation Model data was used for the analysis. Based on the study findings, the climatology of Kabe watershed is bimodal where it receives rain during the main rainy season (Kiremt) and the short rainy season (Belg). Analysis of variability and extremes of mean temperature and rainfall based on observed data and projection was also briefly explained.

Comment:

* The presentation shows climate variability/change scenarios. It could be also useful to relate the present study findings and develop scenarios on future land use where it can help to correct agricultural interventions in the watershed.
  + - 1. Community perception on variability/climate change- presented by Dr. Yitbarek

Household survey and FGD are employed to generate the information for this study. The challenges of agriculture in Kabe watershed and definition of terms were briefly explained. The objective of the study was to assess the awareness of rural farmers on climate change, farmers’ perception on the causes of climate change, and to identify climate change adaptation strategies and options in the watershed. Most respondents in the watershed are well aware of climate change and its adverse effects.

Comments:

* It could be better to have both qualitative and quantitative information to summarize and present the survey findings.
* Disaggregate the information based on certain social categories (gender, wealth, age).

1. **Major issues from the field visit and discussions**

Several issues in relation to the impact of the project interventions and overall project process reflected and discussed during the field visit and subsequent meetings. Some of the core issues are the following:

* Questions on the continuity of the project as it has implication on scaling out/up success stories
* The need for strengthening capacity building at all levels
* Clean water or spring development initiative benefited many households in the watershed
* The SWC initiative has helped to reduce the effect of flooding on the destruction of land resources and pollution of watering points and springs
* Water harvesting structures such as shallow wells helped to irrigate vegetables and produce products for food and cash generation
* The need for feed processing and establishment of fodder-lots
* The need for having diversified option of tree planting and management practices
* Market issues- linking the farmers that produce horticultural crops and other produce to market
* Documentation of processes and lessons - collective action communal grazing and land management
* The issue of eucalyptus- excluding eucalyptus planting activities near the watering points and water sources
* Characterization and mapping of watering points in the watershed
* Sustainability of watering points/improved springs - development of byelaws
* The spring water quality issue- there is a need to take water samples to Ethiopian Health and Nutrition Research Institute or other institution that can provide similar service in Bahir Dar for quality test
* The need to relate project interventions such as introduction of crop varieties, spring development, SWC, tree plantation to climate adaptation

1. **The way forward**

The participants of the meeting and representatives of each institution discussed gaps of each intervention, activities left behind and solutions on how to fill gaps. The details are indicated below:

1. Socioeconomic survey information/data

* Revisiting data for standardization and refilling the missed information (cropping patterns)
* Separation of information before and after project interventions

1. Home-garden, forage and AF

* Prescription of horticultural crops such as shallot, potato and carrots based on certain characteristics
* Make visible fodder tree development in backyards
* Data collection by farmers should be strengthened (involve farmers in data collection and presentation)
* Vetch planting/sowing using residual moisture
* Tree and crop management, data collection and field-day

1. Water activities

* Construction of small structure for livestock drinking- cattle trough
* Mapping issues (watering points)
* Night storage
* Working on policy issues (best practices)
* Operation of drip irrigation
* Establishing mechanisms for the sustainable use of springs and hand dung wells
* Capacity building

1. Soil and water and trees (Sirinka)

* Seedling protection options against frost
* More gully stabilization activities
* Diffuse light store construction for potato
* Alternative energy sources/ woodlots

1. Community mobilization and collective action, and plantation

* Draw lessons and challenges on communal grazing land management
* Coordination of collective action interventions
* Enhancement of the capacities of DAs through training so as to enable them support the project interventions
* Share project information to the new Head of the Wereda office of Agri. head

1. Climate change

* Linking the present CC studies/scenarios to our interventions, climate proofing, landuse change and agriculture. The FAO climate change scenarios can be referred.

1. **List of participants**

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| --- | --- | --- | --- | --- |
| **Name** | **Organization** | **Position** | **E-mail** | **Phone (Mobile)** |
| Dr. Elizabeth Migongo-Bake | UNEP | Task Manager-Dryland | [Elizabeth.Migongo-Bake@unep.org](mailto:Elizabeth.Migongo-Bake@unep.org) | 254-20-7623261 |
| Dr. Kindu Mekonnen | ILRI | Visiting Scientist | [k.mekonnen@cgiar.org](mailto:k.mekonnen@cgiar.org) | 2519-11469056 |
| Mulugeta Habtemichael | ILRI | Research Technican | [m.habtemichael@cgiar.org](mailto:m.habtemichael@cgiar.org) | 251-912937580 |
| Dr. Yitbarek W/Hawariat | Wollo University | Lecturer | yitbarek.wh07@gmail.com | 251-911898583 |
| Teklemariam Bekele | Wollo University | Research Director | [teklemariam044@gmail.com](mailto:teklemariam044@gmail.com) | 251-911898899 |
| Gashaw Muhammed | Wollo University | Acadamic Program Director | [gashawmon@yahoo.com](mailto:gashawmon@yahoo.com) | 251-914717428 |
| Yeshi Muluneh | Wollo University | College Dean | [yeshimita\_2009@yahoo.com](mailto:yeshimita_2009@yahoo.com) | 251-911955227 |
| Mohammed Seid | Wollo University | Lecturer | [mohamedseidmhdn7@gmail.com](mailto:mohamedseidmhdn7@gmail.com) | 251-913309914 |
| Fikru Assefa | Wollo University | Lecturer | [fam63@cameu.edu](mailto:fam63@cameu.edu) | 251-913298351 |
| Mezgebu Mewuded | Wollo University | Department Head | [mezgebu27@yahoo.com](mailto:mezgebu27@yahoo.com) | 251-914737327 |
| Ali Seid | Wollo University | Department Head | [aliseha@yahoo.com](mailto:aliseha@yahoo.com) | 251-910174713 |
| Birhanu Girma | Wollo University | Department Head | [bgirma29@gmail.com](mailto:bgirma29@gmail.com) | 251-920591941 |
| Gashaw Bimrew | Wollo University | Lecturer | [gashbimrew@gmail.com](mailto:gashbimrew@gmail.com) | 251-931288981 |
| Daniel Hailegiorgis | Wollo University | College Research Director | [danil981@gmail.com](mailto:danil981@gmail.com) | 251-912110374 |
| Belay Deribe | SARC | Center Director | [bedmat2@yahoo.com](mailto:bedmat2@yahoo.com) | 251-913005833 |
| Asmare Wubet | SARC | Researcher | [asmarewu03@yahoo.com](mailto:asmarewu03@yahoo.com) | 251-910003341 |
| Khlot Glhana | SARC | Researcher | [khlot.2009@yahoo.com](mailto:khlot.2009@yahoo.com) | 251-912162880 |
| Wondimagegn Bekele | SARC | Researcher | [wondim3485@yahoo.com](mailto:wondim3485@yahoo.com) | 251-911763669 |
| Agegnehu Mekonnen | SARC | Research Assistant | [99ymak2004@gmail.com](mailto:99ymak2004@gmail.com) | 251-912415130 |
| Moges Meshesha | Wor. Agri. Office | Head |  | 251-914609455 |
| Getachew Yimam | Wor. Agri. Office | Food Security Coordinator | [getachewyimam@yahoo.com](mailto:getachewyimam@yahoo.com) | 251-910324379 |
| Getachew Endris | Wor. Agri. Office | Expert | [gech2000@yahoo.com](mailto:gech2000@yahoo.com) | 251-910175006 |
| Derbew Kefyalew | ILRI | Watershed Specialist | [derebewk@gmail.com](mailto:derebewk@gmail.com) | 251-912040599 |